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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,347	01/15/2002	Gurtej S. Sandhu	MI22-1897	7532
21567	7590	09/09/2004	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			SCHILLINGER, LAURA M	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/050,347

Applicant(s)

SANDHU ET AL.

Examiner

Laura M Schillinger

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pm

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 17-19.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 29-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Moore ('543).

In reference to claim 29, Moore teaches a method comprising:

Forming a gate oxide layer over a semiconductive substrate, the gate oxide layer comprising silicon dioxide; the gate oxide layer having an upper and lower surface (Col.3, lines: 1-15);

Exposing the gate oxide layer to activated N species from a N-containing plasma to introduce N into the gate oxide layer and forming an N-enriched region, the N-enriched region being in only an upper half of the gate oxide layer (Col.3, lines: 15-25);

Thermally annealing the N within the N-enriched region to bond at least a majority of the N to Si proximate the N, the N-enriched region remaining confined to the upper half of the silicon oxide containing layer during annealing (Col.5, lines: 1-15);

Forming at least one conductive layer over the gate oxide layer (Col.6, lines: 15-30); and

Forming source/drain regions within the substrate which are gatedly connected to one another by the conductive layer (Col.6, lines: 40-50).

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In reference to claim 30, Moore teaches wherein the N is formed only in the upper 1/3 of the silicon oxide layer by the exposing (Col.5, lines: 15-30).

In reference to claim 31, Moore teaches wherein the N-enriched region is formed only in the upper 1/3 of the silicon oxide layer by the exposing and remains confined to the upper 1/3 during annealing (Col.5, lines: 15-30).

In reference to claim 32, Moore teaches wherein the layer is maintained at a temperature of less than 400 degrees C during the exposing (Col.4, lines: 55-60).

In reference to claim 33, Moore teaches wherein the plasma is maintained with a power of 500 W to 5000 W during exposing (Col.3, lines: 55-60).

In reference to claim 34, Moore teaches wherein the pressure is from 5 to 10 mTorr (Col.4, lines: 55-65).

In reference to claim 35, Moore teaches wherein the exposing occurs for less than 1 minute (Col.3, lines: 60-65).

In reference to claim 36, Moore teaches wherein the annealing comprises thermal processing at a temperature less than 1100 degrees C for a time of at least 3 seconds (Col.5, lines: 5-15).

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In reference to claim 37, Moore teaches wherein the conductive layer is formed on the gate oxide (Col.6, lines: 15-30).

In reference to claim 38, Moore teaches wherein the conductive layer is formed after the annealing (Col. 6, lines: 15-30).

In reference to claim 39, Moore teaches wherein the source/drain regions are formed after annealing (Col.6, lines: 40-50).

In reference to claim 40, Moore teaches wherein the conductive layer and the source/drain regions are formed after annealing (Col.6, lines: 15-40).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M Schillinger whose telephone number is (571) 272-1697. The examiner can normally be reached on M-T, R-F 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


LMS



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